

*As
cancel.* wherein at least one of the dielectric layer, the first conducting capacitor plate, the first metal electrode layer and the second metal electrode layer, is applied by one of an ALD, ALCVD, and CVD method.

Please cancel claims 15, 16 and 21 without prejudice or disclaimer to the subject matter recited therein.

REMARKS

In the outstanding Official Action, the Examiner withdrew claims 15-21 from consideration as not reading on the species of Fig. 1. The Examiner objected to the Title of the invention. Additionally, the Examiner maintained the Election of Species requirement first set forth in the Official Action dated February 22, 2002. Claim 14 was rejected under 35 U.S.C. §112, second paragraph. Claim 14 was additionally rejected under 35 U.S.C. §102(e) over HSIAO et al. (U.S. Patent No. 6,391,705).

By the current amendment, Applicants have amended the Title of the Invention and claim 14, and have canceled claims 15, 16 and 21. In view of the herein-contained amendments and remarks, Applicants respectfully request reconsideration and withdrawal of the outstanding rejections and objections, as well as an indication of the allowability of all the claims now pending, in due course.

Applicants traverse the objection to the Title of the Invention. In the outstanding Official Action, the Examiner asserted that "[t]he title of the invention is not descriptive...

of the invention to which the claims are directed". Applicants respectfully assert that the Examiner's assertion is in error. In particular, claim 14 is directed to "A method for producing a trench capacitor... comprising... forming an isolation collar". The Title of the Invention, as filed, was ---Trench Capacitor With Isolation Collar and Corresponding Method of Production---. In this regard, Applicants respectfully assert that the title is clearly descriptive of the claimed invention. Of course, if the Examiner maintains his assertion that the Title is not descriptive, the Examiner is invited to clearly state on the record which aspect of the title is not descriptive of the claimed features. In any case, Applicants have submitted a new Title herewith, in order to correspond even more closely with the specific recited features of the claimed invention. Accordingly, Applicants respectfully request reconsideration and withdrawal of the objection to the Title.

Applicants traverse the rejection of claim 14 under 35 U.S.C. §112, second paragraph. In particular, Applicants have amended claim 14 to cancel the term "optionally". Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 14 under 35 U.S.C. §112, second paragraph.

Applicants traverse the rejection of claim 14 under 35 U.S.C. §102(e) over HSIAO et al. In particular, claim 14 has been amended to specify that the second conducting capacitor plate is provided as "a first metal electrode layer on the dielectric layer". Additionally, the invention recited in claim 14 provides "a second metal electrode layer in the upper region of the trench such that the second metal electrode layer is in electrical connection with the first metal electrode layer".

The above-noted features of claim 14 are supported in the present application at page 10, line 31 to page 11, line 20. In particular, with respect to Figures 1i and 1m, the present invention describes "arsenic-doped polycrystalline silicon 80" and "polysilicon 80' doped with arsenic". In contrast to the first and second "metal electrode" layers recited in claim 14, HSIAO et al. does not describe "a first metal electrode layer on the dielectric layer inside the trench as a second conducting capacitor plate" or "a second metal electrode layer in the upper region of the trench such that the second metal electrode layer is in electrical connection with the first metal electrode layer" (emphasis added).

Rather, HSIAO describes, at column 3, lines 27-30 for example, "an upper storage node 502... formed by first depositing a layer of conducting material". HSIAO also discloses that "the conducting material is composed of polysilicon". However, polysilicon is not a "first metal electrode layer", as is recited in claim 14. Accordingly, Applicants respectfully assert that HSIAO does not disclose or suggest the above-noted feature recited in claim 14.

Additionally, HSIAO describes at, for example, column 3, lines 56-60, "a storage node connector 604... formed by first depositing a polysilicon layer". However, a polysilicon layer is not a "second metal electrode layer", as is recited in claim 14. Accordingly, Applicants respectfully assert that HSIAO et al. does not disclose or suggest the above-noted feature recited in claim 14.

Applicants additionally note that the above-noted features are similar to the features recited in claims withdrawn from consideration by the Examiner. Accordingly,

Applicants respectfully submit that the withdrawal of claims 15-21 is inappropriate. For example, the Examiner asserts "[f]or example, figure 1 does not have a first metal electrode layer as the second capacitor plate (see claim 15)". However, Applicants respectfully submit that the above-noted feature of claim 15 indicates that the "second capacitor plate" is a metal electrode layer. Insofar as the Examiner appears to be admitting that a second capacitor plate exists in Figure 1, Applicants respectfully submit that the Examiner is admitting that a metal electrode layer is shown in Figure 1 for the purposes of the invention recited in claim 15.

Additionally, Applicants respectfully submit that the above-noted feature originally recited in canceled claim 15 is fully supported by the above-noted description of Figure 1 at, for example, page 10, line 31 to page 11, line 20. As was noted above, with respect to Figures 1i and 1m, the present invention describes "arsenic-doped polycrystalline silicon 80" and "polysilicon 80' doped with arsenic". Accordingly, if the Examiner continues to maintain the propriety of the withdrawal of claims 15-21, Applicants respectfully request that the Examiner provide specific reasoning that pertains to each of the claims withdrawn from consideration by the Examiner.

In any case, Applicants respectfully submit that withdrawal of claims 15, 16 and 21 has been shown to be inappropriate, insofar as claim 14 has been shown to be generic to claims 15, 16 and 21 by the amendment of claim 14 to include substantially all of the features previously recited in claims 15, 16 and 21. Accordingly, insofar as features recited in claims withdrawn from consideration by the Examiner following an election

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requirement are not mutually exclusive of features recited in an independent claim elected by the Applicants, Applicants respectfully submit that the withdrawal of claims 15-21 is inappropriate. Accordingly, Applicants respectfully request reconsideration of the withdrawal of claims 15-21 and reinstatement of claims 17-20.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the objections and rejections of the claims. Applicants further submit that a clear basis exists for a finding of patentability of all the claims now pending. An action to such effect is respectfully requested.

SUMMARY AND CONCLUSION

Applicants have made a sincere effort to place the present application in condition for allowance and believe that they have now done so. Applicants have amended the claims so as to improve the form thereof.

Applicants have discussed the disclosure of the reference relied upon by the Examiner and have pointed out specific features of the claims not disclosed by the reference. Applicants have further discusses the features recited in Applicants' claims and have pointed out how these features are not taught, disclosed nor rendered obvious by the disclosure of the reference cited by the Examiner.

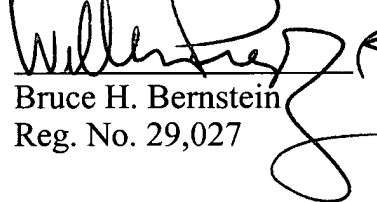
Accordingly, Applicants have provided a clear evidentiary basis supporting the patentability of all the claims in the present application and respectfully request an indication to such effect, in due course.

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Any amendments to existing claims which have been made by the present amendment, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Should there be any questions concerning this application, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,
Harald SEIDL et al.


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March 17, 2003
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MARKED-UP COPY OF AMENDED CLAIMS

14. (Amended) A method for producing a trench capacitor, for use in a semiconductor memory cell, the method comprising:

forming a trench in a semiconductor substrate;

providing a first and a second conducting capacitor plate in the trench;

providing a dielectric layer as a capacitor dielectric between the first and the second conducting capacitor plates;

forming an isolation collar in an upper region of the trench;

+ [optionally] filling a conducting filling material into the trench; [and]

[applying the dielectric layer by one of an ALD, ALCVD and CVD method]

providing a first metal electrode layer on the dielectric layer inside the trench as the second conducting capacitor plate;

+ providing a second metal electrode layer in the upper region of the trench such that the second metal electrode layer is in electrical connection with the first metal electrode layer,

wherein at least one of the dielectric layer, the first conducting capacitor plate, the first metal electrode layer and the second metal electrode layer, is applied by one of an ALD, ALCVD, and CVD method.

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Attorney Docket No. P21161

In re application of : Harald SEIDL et al.

Box Non-Fee

Serial No. : 09/899,189

Group Art Unit: 2814

Filed : July 6, 2001

Examiner: H. V. Pham

For : TRENCH CAPACITOR ISOLATION COLLAR AND CORRESPONDING METHOD OF PRODUCTION

THE COMMISSIONER OF PATENTS AND TRADEMARKS
 Washington, D.C. 20231

Sir:

Transmitted herewith is an Amendment under 37 C.F.R. 1.111 in the above-captioned application.

___ Small Entity Status of this application under 37 C.F.R. 1.9 and 1.27 has been established by a previously filed statement.

___ A verified statement to establish small entity status under 37 C.F.R. 1.9 and 1.27 is enclosed.

___ A Request for Extension of Time.

X No Additional Fee.

The fee has been calculated as shown below:

Claims After Amendment	No. Claims Previously Paid For	Present Extra	Small Entity		Other Than A Small Entity	
			Rate	Fee	Rate	Fee
Total Claims: 18	*21	0	x 9=	\$	x 18=	\$0.00
Indep. Claims: 5	** 6	0	x 42=	\$	x 84=	\$0.00
Multiple Dependent Claims Presented			140=	\$	+280=	\$0.00
Extension Fees for Month				\$		\$0.00
Total:				\$	Total:	\$0.00

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*If less than 20, write 20

**If less than 3, write 3

___ Please charge my Deposit Account No. 19-0089 in the amount of \$_____.

N/A A Check in the amount of \$_____ to cover the filing /extension fee is included.

X The Commissioner is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 19-0089.

X Any additional filing fees required under 37 C.F.R. 1.16.

X Any patent application processing fees under 37 C.F.R. 1.17, including any required extension of time fees in any concurrent or future reply requiring a petition for extension of time for its timely submission (37 CFR 1.136)(a)(3).

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